

Title (en)

Lightly donor doped electrodes for high-dielectric-constant materials

Title (de)

Leicht donatoren-dotierte Elektroden für Materialien mit hoher dielektrischer Konstante

Title (fr)

Electrodes légèrement dopées par donneurs pour les matériaux à haute constante diélectrique

Publication

EP 0618597 B1 19970716 (EN)

Application

EP 94104866 A 19940328

Priority

US 4094693 A 19930331

Abstract (en)

[origin: US6204069B1] A preferred embodiment of this invention comprises a conductive lightly donor doped perovskite layer (e.g. lightly La doped BST 34), and a high-dielectric-constant material layer (e.g. undoped BST 36) overlaying the conductive lightly donor doped perovskite layer. The conductive lightly donor doped perovskite layer provides a substantially chemically and structurally stable electrical connection to the high-dielectric-constant material layer. A lightly donor doped perovskite generally has much less resistance than undoped, acceptor doped, or heavily donor doped HDC materials. The amount of donor doping to make the material conductive (or resistive) is normally dependent on the process conditions (e.g. temperature, atmosphere, grain size, film thickness and composition). This resistivity may be further decreased if the perovskite is exposed to reducing conditions. The lightly donor doped perovskite can be deposited and etched by effectively the same techniques that are developed for the high-dielectric-constant material. The same equipment may be used to deposit and etch both the perovskite electrode and the dielectric. These structures may also be used for multilayer capacitors and other thin-film ferroelectric devices such as pyroelectric materials, non-volatile memories, thin-film piezoelectric and thin-film electro-optic oxides.

IPC 1-7

H01G 4/008; **H01L 27/115**; **H01L 27/108**

IPC 8 full level

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Cited by

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DOCDB simple family (application)

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